

REMARKS

In response to the above-identified Office Action, Applicants amend the application and seek reconsideration thereof. In this response, Applicants amend claims 1, 30, and 35-44. Applicants do add or cancel any claims. Accordingly, claims 1, 4-9, 30, 33-44, 46, 48, 49 and 111-115 are pending.

I. Claim Objections

The Examiner objected to claims 35-44 for containing informalities. These claims have been amended to include the article 'the' at the beginning of each claim as suggested by the Examiner. Accordingly, reconsideration and withdrawal of the objection to claims 35-55 are requested.

II. Claims Rejected Under 35 U.S.C. § 103

Claims 1, 4-9, 30, 33-44, 46, 48, 49 and 111-115 stand rejected under 35 U.S.C. §103 as being unpatentable over WO96/20504 issued to Andrieu, et al. (hereinafter "Andrieu") in view of U.S. Patent No. 5,538,811 issued to Kanbara (hereinafter "Kanbara").

In order to establish *prima case* of obviousness, the Examiner must show that the cited references combined teach or suggest each of the elements of the claims. In regard to claims 1 and 30, these claims include the elements of a porous composite product having a specific surface greater than 10 m²/g, a porous composite product that is extruded, a porous composite product having a plurality of pores with a mean diameter of less than 0.5 micrometers and a porous composite product that is self supportive. Andrieu teaches an electrode comprising an aluminum sheet that is coated with a first layer constituted of 80 percent by weight of activated charcoal mixed with 20 percent of a polymer binder. See Example 4 of Andrieu, col. 7., lines 5-41 of the equivalent U.S. Patent No. 5,811,205 (all references to Andrieu herein are to the U.S. patent). The Examiner admits that Andrieu does not teach a specific surface area for the active charcoal or a mean pore diameter. Further, the first layer relied upon by the Examiner is not obtained by extrusion. Rather, the first layer of the electrode is "hot rolled". See col. 7, line 15 of Andrieu. Also, the first layer of Andrieu is not self supportive. Rather, the aluminum sheet is required to support the first layer.

See col. 7, lines 9-14 of Andrieu. Thus, Andrieu does not teach or suggest each of the elements of claims 1 and 30.

Kanbara does not cure these defects of Andrieu. Kanbara teaches an electrolytic solution intended to form an electrolytic layer in a capacitor. The electrolytic solution of Kanbara is constituted as a mixture comprising polymeric material and activated carbon. The activated carbon exhibits a specific area of 2500 m²/g and micropores with an average diameter of 0.002 micrometers. See col. 14, lines 59-53 of Kanbara. However, the Examiner has not indicated and Applicants have been unable to discern any part of Kanbara that teaches a specific surface of an *electrolytic layer* including this activated carbon. Further, while the activated carbon in the electrolytic solution may have a micropore size of 0.002 micrometers, the Examiner has not established that the *electrolytic layer* that includes the activated carbon has a porous structure. Rather, Kanbara describes the process for preparing the electrolytic layer involving coating and curing that does not include any step that will lead to the creation of pores in the electrolytic layer. See Kanbara, col. 15, lines 5-14. Thus, the Examiner has not indicated and the Applicants have been unable to discern any part of Kanbara that teaches or suggests an electrolytic layer that has a porous structure as claimed.

In addition, the electrolytic layer taught by Kanbara is not attained by extrusion as claimed. See col. 15, lines 8-14. Also, the electrolytic layer of Kanbara is not self supportive as claimed. Rather, the electrolytic layer of Kanbara is coated onto a metallic foil to form the current collector. See col. 15, lines 51-57. Andrieu and Kanbara both describe electrodes manufactured by coating techniques, where a mixture containing a filler is coated onto substrate. See Andrieu, col. 7, line 11 and Kanbara, col. 15, lines 8-11. However, the porous composite product as claimed in claims 1 and 30 is obtained by extrusion and is self supportive which means that "its cohesion is sufficient for it to retain its integrity without being supported." See page 5, lines 35-37 of the Detailed Description. Also, the Examiner has not indicated and Applicants have been unable to discern any part of Andrieu or Kanbara that teaches an open porous structure.

The invention as claimed inherently includes advantages not provided by the teachings of Andrieu and Kanbara. The porous composite product of the current invention does not use solvent. See page 3, line 29 of the Application. The porous composite product can be spooled. See page 5, lines 7-10 of the Application. Also, the porous composite product does not need to be linked to a support substrate in order to maintain its integrity as discussed above. Therefore, Andrieu in view of Kanbara does not teach or suggest each of the elements of claims 1 and 30.

Applicants also believe that the combination of Andrieu and Kanbara is improper. If the proposed modification or combination of prior art would change a principle of operation the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Raitti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) and MPEP § 2143.02. The Examiner in seeking to combine Andrieu with Kanbara proposes a modification of Andrieu that changes the principle of its operation. Andrieu teaches a capacitor comprising two electrodes and a liquid electrolyte (i.e., "the separator is impregnated with electrolyte"). See col. 6, lines 3-5 and col. 7, lines 34-36 and 67 of Andrieu. Kanbara teaches capacitors comprising two electrode layers and a solid electrolytic layer. See col. 15, lines 8-14 of Kanbara. The proposed modification requires the replacement of the liquid electrolyte of Andrieu with a solid electrolyte of Kanbara thus changing the principle of operation for Andrieu which is based on the use of a *liquid* electrolyte. The Examiner has not indicated and Applicants have been unable to discern any part of Andrieu or Kanbara that teaches the manner in which this replacement can be achieved. Thus, one of ordinary skill in the art would not be able to combine Andrieu with Kanbara by replacing the liquid electrolyte layer of Andrieu with the solid electrolyte layer of Kanbara.

Further, the Examiner's discussion of Andrieu relies on the Examiner's characterization of the "bifunctional electrode" of Andrieu. See page 2 of paper no. 13. The Examiner attempts to combine these teachings regarding an electrode with teachings regarding the electrolyte layer of Kanbara. However, in capacitors, the electrode and the electrolyte are two distinct and discrete elements that have separate functions and properties. Consequently, one of ordinary skill in the art would not seek to combine the features that relate to these distinct parts of capacitors, namely

electrodes and electrolytes. Therefore, the Examiner has improperly combined features of an electrode of Andrieu with the features of an electrolyte of Kanbara. Thus, Andrieu cannot be properly combined with Kanbara to teach or suggest each of the elements of claim 1 and 30. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness for claims 1 and 30 over Andrieu in view Kanbara. Accordingly, reconsideration and withdrawal of the obviousness rejection of claims 1 and 30 are requested.

The claimed invention provides a polymeric product with improved performance when used for electrochemical storage of energy. The porous composite product can be used as an electrode in a capacitor where its high specific surface allows an improved diffusion of an electrolyte in the product. The claimed open porous structure and the mean diameter of the pores being less than 0.5 micrometers contributes to the accessibility to the active mass while ensuring an homogenous structure for this product. As a result, an electrode and a capacitor utilizing the claimed invention can charge and discharge a large amount of electrical charge.

In regard to claims 4-9, 33-44, 46, 48, 49 and 111-115, these claims depend from independent claims 1 and 30 incorporate the limitations thereof. Thus, at least for the reasons mentioned in regard to claim 1 and 30, these claims are not obvious over Andrieu in view of Kanbara. Accordingly, reconsideration and withdrawal of the obviousness rejection of claims 4-9, 33-44, 46, 48, 49 and 111-115 are requested.


CONCLUSION

In view of the foregoing, it is believed that all claims now pending, namely claims 1, 4-9, 30, 33-44, 46, 48, 49, 111-115 patentably define the subject invention over the prior art of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (310) 207 3800.

Respectfully submitted,

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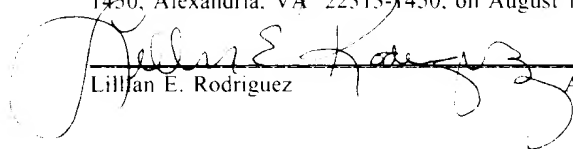
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